

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA
FTW230**

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7944	30 Jan 2001	1354	1	1.9	Did not sample	Temp: -10°F, clear, no wind. Background PID: 0.6 to 2.2 No evidence of contamination - did not collect sample for chemical analyses.
		1410	5	0.9	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1421	10	1.4	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		1429	15	0.9	Did not sample	Sample wet. No evidence of contamination - did not collect sample for chemical analyses.
		1446	20	0.2	Did not sample	Sample saturated. Groundwater measured at 16.4 bgs. No fuel odor or evidence of contamination.
		1457	25	0.6	Did not sample	No fuel odor or evidence of contamination.
		1516	30	1.1	Did not sample	No fuel odor or evidence of contamination.
		1545	35	NT	Did not sample	Could not shake heave out of augers continued to 40
		1610	40	0.4	Did not sample	No fuel odor or evidence of contamination.
		1630	50	NT	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted borehole.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

**CHEMIST FIELD OBSERVATION SUMMARY
FAMILY HOUSING REVITALIZATION
FORT WAINWRIGHT, ALASKA
FTW230**

BOREHOLE NUMBER	DATE	TIME	DEPTH (in feet)	PID READING	SAMPLES COLLECTED AND ANALYSES DONE	COMMENTS
AP-7945	31 Jan 2001	0823	1	3.6	Did not sample	Temp: 0°F, no wind. Calibrate PID Background: 1.8 to 4.2 No evidence of contamination - did not collect sample for chemical analyses.
		0831	5	2.2	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0840	10	2.6	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0849	15	6.2	Did not sample	No evidence of contamination - did not collect sample for chemical analyses.
		0913	20	1.0	Did not sample	Sample saturated. Groundwater measured at 16.4 bgs. No fuel odor or evidence of contamination.
		0925	25	NT	Did not sample	No fuel odor or evidence of contamination.
		0956	30	0.6	Did not sample	No fuel odor or evidence of contamination.
		1006	35	0.5	Did not sample	No fuel odor or evidence of contamination.
		1020	40	0.7	Did not sample	No fuel odor or evidence of contamination.
		1029	45	0.6	Did not sample	No fuel odor or evidence of contamination.
		1048	50	0.6	Did not sample	No fuel odor or evidence of contamination. Backfilled and grouted borehole.
						Dropped off IDW form for estimated washwater used during equipment decontamination.

FY01 REPLACEMENT FAMILY HOUSING

FTW230

Appendix B

Soils and Geology Section

Soil Boring Logs



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 19 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,967,321 ft
Easting: 1,390,325 ft

Top of Hole
Elevation: 450.6 ft

Hole Number, Field: Permanent:
AP-1 AP-7916

Driller:
Bill Tester

Inspector:
Mike Anderson

Type of Hole: ☐ other
☐ Test Pit ☐ Auger Hole ☐ Monitoring Well ☒ Piezometer

Depth to Groundwater:
13.20 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1	NF			ML	SILT with Sand				0.8	1.1		Brown, frozen (Nf to 30") to moist, fine sand with nonplastic (NP) fines, trace organics, POSSIBLE FILL
2														
4														
5		2		F2	4	SM	Silty SAND	3	76	21	0.5	0.3	30	Dark brown, moist, fine to medium sand, NP fines, POSSIBLE FILL
6					2									
8														
10		3			3	SP-SM	Poorly graded SAND with Silt					0.3		Dark brown, moist, fine to medium sand, NP fines, POSSIBLE FILL
11					4									
12					5									
13					3									
14														
16		4		F2	8	SM	Silty SAND	2	72	26	0.5	0.4	27	Blackish brown, wet, fine to medium sand, NP fines, 10% organics by volume, organic odor, first 6 inches of spoon advanced under weight of hammer
17					1									
18					2									
19					3									
20		5			4	GW	Well-graded GRAVEL with Sand				2.0	0.4		Olive brown, wet, subangular to subrounded gravel, fine to coarse sand, 1 foot of heaving sand
21					10									
22					14									
23					16									
24														
26		6			10	GW	Well-graded GRAVEL with Sand				2.0	0.3		Olive brown, wet, subangular to subrounded gravel, fine to coarse sand, 2.5 feet of heaving sand
27					13									
28					14									
29					15									
30														Bottom of Hole 26.5 ft Elevation 424.1 ft Groundwater Encountered While Drilling: at depth 13.20 ft PID = (Hot) Photo Ionization Detector
32														

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Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7916



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 19 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,967,128 ft
Easting: 1,390,915 ft

Top of Hole
Elevation: 449.1 ft

Hole Number, Field: Permanent:
AP-2 AP-7917

Driller:
Bill Tester

Inspector:
Mike Anderson

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
12.90 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frost ASTM D 4083	Frost Class: TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
0		1	NF	F4		ML	Sandy SILT	7	39	54		0.4	14	Brown, frozen (36"), fine sand, nonplastic (NP) fines, trace organics, POSSIBLE FILL
2														
4		2			3 3 4 3	SP	Poorly graded SAND					0.4		Brown, moist, subrounded gravel, fine sand
6														
8														
10		3		NFS	9 15 19 20	SP	Poorly graded SAND with Gravel	47	48	5	1.8	0.4	2	Brown, moist, subangular to subrounded gravel, fine to coarse sand
12														
14					8 15 14 15	GW	Well-graded GRAVEL with Sand				2.0	0.4		Brownish orange, wet, subrounded gravel, fine to coarse sand
16		4												
18														
20		5			7 8 8 11	GW	Well-graded GRAVEL with Sand				2.0	0.4		Olive gray, wet, subangular to subrounded gravel, fine to coarse sand, 6 inches of heaving sand
22														
24														
26		6			12 11 11 6	GW	Well-graded GRAVEL with Sand				2.3	0.4		Olive gray, wet, subangular to subrounded gravel, fine to coarse sand, 6 inches of heaving sand
28														Bottom of Hole 26.5 ft Elevation 422.6 ft Groundwater Encountered While Drilling: at depth 12.90 ft PID = (Hot) Photo Ionization Detector
30														
32														

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Project:
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Hole Number:
AP-7917



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ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 20 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,967,019 ft
Easting: 1,391,475 ft

Top of Hole
Elevation: 451.3 ft

Hole Number, Field: Permanent:
AP-3 AP-7918

Driller:
Bill Tester

Inspector:
Mike Anderson

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
15.20 ft WD

Depth Drilled:
50.0 ft

Total Depth:
52.0 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max


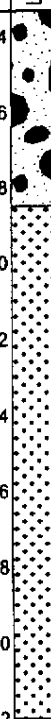
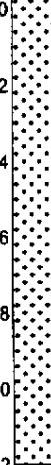
Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
0-2		1	Nf		G	ML	Sandy SILT				0.8	1.4		Brown, frozen (36") to moist, subrounded gravel, fine sand, nonplastic (NP) fines, trace organics, POSSIBLE FILL
2-4														
4-6		2			5 4 3 4	SP	Poorly graded SAND				2.5	0.4		Brown, moist, fine to medium sand, NP fines, possibly FILL
6-8														
8-10		3			3 14 14 16	SP	Poorly graded SAND with Gravel				2.0	0.2		Brown, moist, subangular to subrounded gravel, fine and coarse sand
10-12														
12-14														
14-16		4			11 14 12 11	GW	Well-graded GRAVEL with Sand				2.0	0.2		Brown, wet, subangular to subrounded gravel, fine to coarse sand, some fractured gravel
16-18														
18-20														
20-22		5			4 8 3 4	GW	Well-graded GRAVEL with Sand				1.8	0.2		Olive gray, wet, subangular to subrounded gravel, fine to coarse sand, trace organics (wood)
22-24														
24-26		6		PFS	20 14 6 9	GP	Poorly graded GRAVEL with Sand	53	43	4	2.3	0.4	8	Olive gray, wet, subangular to subrounded gravel, fine to coarse sand, 4 feet of heaving sand
26-28														
28-30														
30-32		7			10 12 7 6	GW	Well-graded GRAVEL with Sand				1.8	0.5		Olive grey, wet, subrounded gravel, fine to coarse sand, 1 foot of heaving sand

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FAMILY HOUSING UPGRADE - FTW230


Hole Number:
AP-7918

 CORPS OF ENGINEERS ENGINEERING SERVICES		Fort Wainwright, Alaska				Date: 20 Jan 2001									
Soils and Geology Section EXPLORATION LOG		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other				Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other									
		Location: Northing: 3,967,019 ft Easting: 1,391,475 ft				Top of Hole Elevation: 451.3 ft									
Hole Number, Field: AP-3 Permanent: AP-7918		Driller: Bill Tester				Inspector: Mike Anderson									
Type of Hole: <input type="checkbox"/> other <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Piezometer		Depth to Groundwater: 15.20 ft WD		Depth Drilled: 50.0 ft		Total Depth: 52.0 ft									
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit		Type of Equipment: Acker Soil Max									
				Type of Samples: Grab and Drive											
Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class: TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks	
								%Gravel	%Sand	%Fines					
34		8			13 15 17 18	GW	Well-graded GRAVEL with Sand				2.3	0.2	Olive gray, wet, subangular to subrounded gravel, fine to coarse sand, some fractured gravel, 1 foot of heaving sand		
36							SW	Well-graded SAND with Gravel				1.0		0.2	Olive gray, wet, subangular to subrounded gravel, fine to coarse sand, 2 feet of heaving sand
38								Well-graded SAND with Gravel				1.5		0.3	
40	9			6 7 11 9	SW	Well-graded SAND with Gravel				1.0	0.2	Olive gray, wet, subangular to subrounded gravel, fine to coarse sand, 2 feet of heaving sand			
42		10			10 14 20 31	SW	Well-graded SAND with Gravel				1.5		0.3	Olive gray, wet, subangular to subrounded gravel, fine to coarse sand, 4 feet of heaving sand	
44							Well-graded SAND with Gravel				1.5	0.3			
46							Well-graded SAND with Gravel				1.5	0.3			
48							Well-graded SAND with Gravel				1.5	0.3			
50													Bottom of Hole 52.0 ft Elevation 399.3 ft Groundwater Encountered While Drilling: at depth 15.20 ft PID = (Hot) Photo Ionization Detector		
52															
54															
56															
58															
60															
62															
64															
66															

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 May 94 Prev. Ed. Obsolete

 Project:
FAMILY HOUSING UPGRADE - FTW230

 Hole Number:
AP-7918



 CORPS OF ENGINEERS ENGINEERING SERVICES		Fort Wainwright, Alaska		Date: 21 Jan 2001										
Soils and Geology Section EXPLORATION LOG		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other		Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other										
		Location: Northing: 3,966,844 ft Easting: 1,391,766 ft		Top of Hole Elevation: 452.2 ft										
Hole Number, Field: AP-4		Permanent: AP-7919		Driller: Bill Tester										
Inspector: Mike Anderson		Type of Hole: <input type="checkbox"/> other <input type="checkbox"/> Test Pit <input type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input checked="" type="checkbox"/> Piezometer		Depth to Groundwater: 16.80 ft WD										
Depth Drilled: 49.5 ft		Total Depth: 51.5 ft												
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit										
Type of Equipment: Acker Soil Max		Type of Samples: Grab and Drive												
Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class: TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
0-2		1	NF			ML	SILT with Sand					1.2		Brown, frozen (36"), fine sand, nonplastic (NP) fines, POSSIBLE FILL
2-4					6 6 4	SP-SM	Poorly graded SAND with Silt					0.6		Brown, moist, fine sand, NP fines, some orange staining, POSSIBLE FILL
4-6		2												
6-8														
8-10		3		NFS	3 3 5	SP-SM	Poorly graded SAND with Silt	13	80	7	0.8	0.3	4	Brown, moist, fine to medium sand
10-12														
12-14														
14-16		4			6 9 8	SP	Poorly graded SAND				1.5	0.4		Brown, moist to wet, fine to medium sand
16-18														
18-20		5			5 11 22 8	SP	Poorly graded SAND with Gravel				1.5	0.3		Brown, wet, subangular to subrounded gravel, fine to coarse sand
20-22														
22-24														
24-26		6			5 17 16 12	GW	Well-graded GRAVEL with Sand				1.8	0.3		Olive gray, wet, subangular to subrounded gravel, fine to coarse sand, 1.5 feet of heaving sand
26-28														
28-30														
30-32		7			6 8 9 10	GW	Well-graded GRAVEL with Sand				2.5	0.4		Olive gray, wet, subangular to subrounded gravel, fine to coarse sand
32-34														

EXPLORATION LOG FTW230.GPJ GEO. LOG.GDT 3/9/01

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 Project:
FAMILY HOUSING UPGRADE - FTW230

 Hole Number:
AP-7919

 CORPS OF ENGINEERS ENGINEERING SERVICES Soils and Geology Section EXPLORATION LOG		Fort Wainwright, Alaska				Date: 21 Jan 2001								
		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other				Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other								
		Location: Northing: 3,966,844 ft Easting: 1,391,766 ft				Top of Hole Elevation: 452.2 ft								
Hole Number, Field: AP-4 Permanent: AP-7919			Driller: Bill Tester			Inspector: Mike Anderson								
Type of Hole: <input type="checkbox"/> other _____ <input type="checkbox"/> Test Pit <input type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input checked="" type="checkbox"/> Piezometer			Depth to Groundwater: 16.80 ft WD		Depth Drilled: 49.5 ft		Total Depth: 51.5 ft							
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit		Type of Equipment: Acker Soil Max		Type of Samples: Grab and Drive						
Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
34		8			8 7 8 13	GW	Well-graded GRAVEL with Sand				2.0	0.2	Olive gray, wet subangular to subrounded gravel, fine to coarse sand, some fractured gravel, 3.5 feet of heaving sand	
36														
38														
40		9			6 6 6 9	SP	Poorly graded SAND with Gravel				1.5	0.3	Olive brown, wet, subangular to subrounded gravel, fine to coarse sand, some fractured gravel, 2 feet of heaving sand	
42														
44														
46														
48														
50		10			26 26 24 22	GW	Well-graded GRAVEL with Sand				2.0	0.2	Olive green, wet, subangular to subrounded gravel, fine to coarse sand, some fractured gravel, 2 feet of heaving sand	
52													Bottom of Hole 51.5 ft Elevation 400.7 ft Groundwater Encountered While Drilling: at depth 16.80 ft PID = (Hot) Photo Ionization Detector	
54														
56														
58														
60														
62														
64														
66														

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 Project:
FAMILY HOUSING UPGRADE - FTW230

 Hole Number:
AP-7919



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 22 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,966,828 ft
Easting: 1,391,591 ft

Top of Hole
Elevation: 452.6 ft

Hole Number, Field: Permanent:
AP-5 AP-7920

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
17.00 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max


Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1	Nbn			SM	Silty SAND					0.8		Brown, frozen (6") to moist, fine sand, NP fines, POSSIBLE FILL
2														
4														
6		2		F4	2 2 3	ML	SILT with Sand	6	14	80	0.8	0.4	26	Brown, moist, fine sand, nonplastic fines, POSSIBLE FILL
8														
10		3		PFS	15 23 21 19	GW-GM	Well-graded GRAVEL with Silt and Sand	53	40	7	0.5	0.4	2	Brown, moist, rounded gravel, fine to medium sand
12														
14														
16		4			10 10 8 10	SP	Poorly graded SAND					0.5		Brown, moist, medium sand
18														
20		5		PFS	6 7 6 7	GW	Well-graded GRAVEL with Sand	55	41	4	1.5	0.3	8	Gray, wet, subrounded gravel, fine to coarse sand
22														
24														
26		6			15 20 25 25	GP	Poorly graded GRAVEL with Sand				0.8	0.3		2' heaving soil Gray, wet, subrounded gravel, fine to coarse sand, 2 feet of heaving sand
28														Bottom of Hole 26.5 ft Elevation 426.1 ft Groundwater Encountered While Drilling: at depth 17.00 ft PID = (Hot) Photo Ionization Detector
30														
32														

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Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7920

 CORPS OF ENGINEERS ENGINEERING SERVICES Soils and Geology Section EXPLORATION LOG		Fort Wainwright, Alaska				Date: 22 Jan 2001	
		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other				Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other	
		Location: Northing: 3,966,799 ft Easting: 1,391,327 ft				Top of Hole Elevation: 452.2 ft	
Hole Number, Field: AP-6		Permanent: AP-7921		Driller: Bill Tester		Inspector: Steve Henslee	
Type of Hole: <input type="checkbox"/> other _____ <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Piezometer				Depth to Groundwater: 16.25 ft WD		Depth Drilled: 24.5 ft Total Depth: 26.5 ft	
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit		Type of Equipment: Acker Soil Max Type of Samples: Grab and Drive	

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
0-2		1	Nbn			ML	SILT					0.4		Brown, frozen (18") to moist, fine sand, nonplastic (NP) fines, POSSIBLE FILL
2-6		2		F4	2 3 5 4	ML	SILT with Sand	23	77			0.3	21	Brown, moist, fine sand, nonplastic (NP) fines, POSSIBLE FILL
6-12		3			15 18 20 25	SW	Well-graded SAND				1.0	0.4		Tan, moist, subrounded gravel, fine to coarse sand
12-16		4			6 9 6 3	SW	Well-graded SAND with Gravel				1.0	0.4		Gray, moist to wet (bottom 8" of sample), subrounded gravel, fine to coarse sand, nonplastic (NP) fines
16-22		5			7 4 4 4	SP	Poorly graded SAND with Gravel				1.5	0.4		Gray, wet, subrounded gravel, medium to coarse sand, 2 feet of heaving sand
22-26		6			7 5 5 4	SP	Poorly graded SAND				0.5	0.4		Gray, wet, subrounded gravel, medium to coarse sand, 4 feet of snow
26-28														Bottom of Hole 26.5 ft Elevation 425.7 ft Groundwater Encountered While Drilling: at depth 16.25 ft PID = (Hot) Photo Ionization Detector

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Project: FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7921



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 22 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,966,827 ft
Easting: 1,391,231 ft

Top of Hole
Elevation: 453.1 ft

Hole Number, Field: Permanent:
AP-7 AP-7922

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
16.70 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max


Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class: TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1	Nbn			SM	Silty SAND with Gravel				0.3	1.0		Brown, frozen (6") to moist, subrounded gravel, fine and coarse sand, nonplastic (NP) fines, POSSIBLE FILL
2														
4														
5		2		F4	9	ML	Sandy SILT		42	28	4.0	0.4	15	Brown, moist, fine to medium sand, NP fines, POSSIBLE FILL
6		2a			6	SP	Poorly graded SAND							Gray, moist, medium sand
8														
10		3		NFS	20 27 34 39	GP- GM	Poorly graded GRAVEL with Silt and Sand	53	41	6	0.5	0.4	2	Tan, moist, subrounded gravel, fine to coarse sand
12														
14														
16		4			4 2 3 4	SP	Poorly graded SAND				4.0	0.5		Gray, moist, medium sand
18														
20		5			2 2 3 5	SP	Poorly graded SAND				1.0	0.4		Gray, wet, subrounded gravel, medium sand, 4 feet of heaving sand
22														
24														
26		6			6 8 10 8	SW	Well-graded SAND with Gravel				0.5	0.4		Gray, wet, subrounded gravel, fine to coarse sand, 2 feet of heaving sand
28														Bottom of Hole 26.5 ft Elevation 426.6 ft Groundwater Encountered While Drilling: at depth 16.70 ft PID = (Hot) Photo Ionization Detector
30														
32														

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Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7922


 CORPS OF ENGINEERS ENGINEERING SERVICES		Fort Wainwright, Alaska				Date: 22 Jan 2001	
		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other				Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other	
Soils and Geology Section EXPLORATION LOG		Location: Northing: 3,966,952 ft Easting: 1,391,022 ft				Top of Hole Elevation: 452.4 ft	
		Hole Number, Field: AP-8 Permanent: AP-7923		Driller: Bill Tester		Inspector: Steve Henslee	
Type of Hole: <input type="checkbox"/> other _____ <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Piezometer				Depth to Groundwater: 16.50 ft WD		Depth Drilled: 24.5 ft	
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit		Type of Equipment: Acker Soil Max	
						Type of Samples: Grab and Drive	

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1	Nbn			ML	SILT with Sand				2.0	2.6		Brown, frozen (6") to moist, fine to coarse sand, nonplastic (NP) fines, POSSIBLE FILL
2														
4														
5		2			5	SM	Silty SAND with Gravel	20	32	48	0.5	0.5	9	Brown, moist, fine sand, NP fines, POSSIBLE FILL
6					4									
8					3									
10		3			8	GW-GM	Well-graded GRAVEL with Silt and Sand	55	37	8	0.5	0.6	2	Brown, moist, fine to coarse subrounded gravel, fine and coarse sand
12					11									
14					10									
16		4			9	SP	Poorly graded SAND				1.5	0.6		Brown, moist, fine to coarse subrounded gravel, medium to coarse sand
18					14									
20		5			21	GP	Poorly graded GRAVEL with Sand				0.3	0.3		Gray, wet, fine subrounded gravel, fine to coarse sand
22					18									
24					17									
26		6			21	GP	Poorly graded GRAVEL with Sand				0.3	0.3		Gray, wet, fine subrounded gravel, fine to coarse sand, NP fines
28					22									
30					25									
32					32									
														Bottom of Hole 26.5 ft Elevation 425.9 ft Groundwater Encountered While Drilling: at depth 16.50 ft PID = (Hot) Photo Ionization Detector

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 May 94 Prev. Ed. Obsolete

 Project:
FAMILY HOUSING UPGRADE - FTW230

 Hole Number:
AP-7923

 CORPS OF ENGINEERS ENGINEERING SERVICES Soils and Geology Section EXPLORATION LOG		Fort Wainwright, Alaska				Date: 23 Jan 2001	
		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other				Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other	
		Location: Northing: 3,966,839 ft Easting: 1,391,022 ft				Top of Hole Elevation: 453.5 ft	
Hole Number, Field: AP-9		Permanent: AP-7924		Driller: Bill Tester		Inspector: Steve Henslee	
Type of Hole: <input type="checkbox"/> other <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Piezometer				Depth to Groundwater: 17.50 ft WD		Depth Drilled: 40.0 ft Total Depth: 40.0 ft	
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit		Type of Equipment: Acker Soil Max Type of Samples: Grab and Drive	

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1	Nbn			ML	SILT				0.3		Brown, frozen (20") to moist, subangular gravel, fine to medium sand, nonplastic (NP) fines, POSSIBLE FILL	
2														
4						SM	Silty SAND				0.3		Brown, moist, fine sand, NP fines, POSSIBLE FILL	
6		2			9 10 9									
8														
10		3		F4	3 3 2	ML	Sandy SILT	5	27	68	0.8	0.4	19	Brown, moist, fine sand, NP fines
12														
14						SP	Poorly graded SAND with Gravel				0.8	0.3		Gray, moist, fine subrounded gravel, fine sand, NP fines
16		4			9 7 8									
18														
20		5			7 3 3	GP	Poorly graded GRAVEL with Sand				0.8	0.3		Brown, wet, fine subrounded gravel, fine to coarse sand
22														
24						SW	Well-graded SAND with Gravel				1.0	0.4		Brown, wet, fine subrounded gravel, fine to coarse sand
26		6			6 9 6									
28														
30		7			6 11 19 29									Drove spoon 24 inches and then floated spoon to 35 feet, before recovering sample. Spoon damaged during advancement and sample lost. Decided to drill onto 40 feet for next sample, but unable to collect due to 17' of heaving sand at this depth, BOH taken at 40',
32														

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Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7924



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 23 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,966,839 ft
Easting: 1,391,022 ft

Top of Hole
Elevation: 453.5 ft

Hole Number, Field: Permanent:
AP-9 AP-7924

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
17.50 ft WD

Depth Drilled:
40.0 ft

Total Depth:
40.0 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
34														sample number 6 (24.5 ft -26.5 ft) deepest sample recovered.
36														
38														Bottom of Hole 40.0 ft Elevation 413.5 ft Groundwater Encountered While Drilling: at depth 17.50 ft PID = (Hot) Photo Ionization Detector
40														
42														
44														
46														
48														
50														
52														
54														
56														
58														
60														
62														
64														
66														

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May 94 Prev. Ed. Obsolete

Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7924



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ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 24 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,967,118 ft
Easting: 1,391,068 ft

Top of Hole
Elevation: 449.3 ft

Hole Number, Field: Permanent:
AP-10 AP-7925

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☐ Auger Hole ☐ Monitoring Well ☒ Piezometer

Depth to Groundwater:
13.40 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Ackar Soil Max


Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1	Nbn			ML	SILT with Sand							Brown, frozen (18") to moist, fine sand, nonplastic (NP) fines, POSSIBLE FILL
2														
4														
6		2		F4	3 3 4 3	ML	Sandy SILT		33	67			24	Brown, moist, fine sand, NP fines, POSSIBLE FILL
8														
10		3		NFS	6 10 7 9	SP	Poorly graded SAND	50	48	2	0.5		2	Brown, moist, trace of fine gravel, medium to coarse sand
12														
14														
16		4			10 12 13 15	GP	Poorly graded GRAVEL with Sand				0.3			Brown, wet, fine subrounded gravel, fine to coarse sand
18														
20		5			13 10 7 9	GW	Well-graded GRAVEL with Sand				1.3			Brown, wet, fine subrounded gravel, fine to coarse sand
22														
24														
26		6			10 12 8 11	GP	Poorly graded GRAVEL with Sand				0.8			Gray, wet, fine subrounded gravel, fine to coarse sand
28														Bottom of Hole 26.5 ft Elevation 422.8 ft Groundwater Encountered While Drilling: at depth 13.40 ft
30														
32														

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Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7925

 CORPS OF ENGINEERS ENGINEERING SERVICES		Fort Wainwright, Alaska				Date: 24 Jan 2001			
		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other				Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other			
Soils and Geology Section EXPLORATION LOG		Location: Northing: 3,967,029 ft Easting: 1,390,839 ft				Top of Hole Elevation: 452.5 ft			
		Hole Number, Field: AP-11 Permanent: AP-7926				Driller: Bill Tester		Inspector: Steve Henslee	
Type of Hole: <input type="checkbox"/> other _____ <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Piezometer				Depth to Groundwater: 16.50 ft WD		Depth Drilled: 24.0 ft		Total Depth: 26.0 ft	
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit		Type of Equipment: Acker Soil Max		Type of Samples: Grab and Drive	

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
0-2		1	Nbn	F4	2 3 4 3	SM	Silty SAND					0.6	15	Brown, moist, fine sand, nonplastic (NP) fines, POSSIBLE FILL
2-4		2												ML
4-6		3	NFS	8 9 12 11	GP-GM	Poorly graded GRAVEL with Silt and Sand	61	34	5	1.5	0.9	1	1	Brown, moist, fine to coarse subrounded gravel, fine to coarse sand
6-8		4												GP
8-10		5	NFS	7 14 18 17	GP	Poorly graded GRAVEL with Sand						1.5	7	Brown, wet, subrounded gravel, medium to coarse sand
10-12		6												GP
12-14			NFS	9 7 5 4	GP	Poorly graded GRAVEL with Sand	63	33	4	0.8				Bottom of Hole 26.0 ft Elevation 426.5 ft Groundwater Encountered While Drilling: at depth 16.50 ft PID = (Hot) Photo Ionization Detector
14-16														
16-18			NFS											
18-20														
20-22			NFS											
22-24														
24-26			NFS											
26-28														
28-30			NFS											
30-32														
32-34			NFS											
34-36														

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 Project:
FAMILY HOUSING UPGRADE - FTW230

 Hole Number:
AP-7926



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ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 24 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,966,643 ft
Easting: 1,390,910 ft

Top of Hole
Elevation: 452.5 ft

Hole Number, Field: Permanent:
AP-12 AP-7927

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
17.50 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Ackar Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
2		1	Nbn			SM	Silty SAND with Gravel					1.6		Brown, frozen to moist, subrounded gravel, fine sand, nonplastic (NP) fines, POSSIBLE FILL
4		2			4 4 5 5	ML	SILT with Sand					0.7		Brown, moist, fine sand, NP fines, POSSIBLE FILL
10		3a 3b		F4	4 4 3 3	ML SP	Sandy SILT Poorly graded SAND		45	55		0.6	11	Brown, moist, fine sand, NP fines, POSSIBLE FILL Tan, moist, medium sand
14		4		S2	1 3 4 6	SM	Silty SAND		74	26		33		Mottled brown and dark gray, wet, fine sand, NP fines, faint sewage odor present
20		5			1 2 2 2	SP	Poorly graded SAND							Gray, wet, fine to medium sand, sample taken in a separate test boring 2 feet west of this boring location
24		6			1 3 4 7	SP	Poorly graded SAND							Dark gray, wet, fine to medium sand
26														Bottom of Hole 26.5 ft Elevation 426.0 ft Groundwater Encountered While Drilling: at depth 17.50 ft PID = (Hot) Photo Ionization Detector

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May 94 Prev. Ed. Obsolete

Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7927



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Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 25 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,967,000 ft
Easting: 1,391,229 ft

Top of Hole
Elevation: 452.6 ft

Hole Number, Field: Permanent:
AP-13 AP-7928

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
16.50 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1	Nbn			ML	SILT with Sand							Dark brown, frozen (18") to moist, fine sand, nonplastic (NP) fines, POSSIBLE FILL
2														
4														
6		2			6 5 4	SM	Silty SAND					0.6		Brown, moist, fine sand, NP fines, POSSIBLE FILL
8														
10		3		S2	2 3 12 14	SM	Silty SAND with Gravel	34	47	19	0.8	0.4	20	Brown, moist, subrounded gravel, fine sand, NP fines
12														
14														
16		4			12 15 15 13	SP	Poorly graded SAND with Gravel				1.8	0.2		Brown, moist, fine subrounded gravel, medium sand
18														
20		5		PFS	7 10 14 9	GW	Well-graded GRAVEL with Sand	61	35	4	2.0	3.2	7	Brown, wet, fine subrounded gravel, fine to coarse sand
22														
24														
26		6			9 14 17 18	GP	Poorly graded GRAVEL with Sand				2.3	2.8		Gray, wet, fine subrounded gravel, fine to coarse sand
28														Bottom of Hole 26.5 ft Elevation 426.1 ft Groundwater Encountered While Drilling: at depth 16.50 ft PID = (Hot) Photo Ionization Detector
30														
32														

EXPLORATION LOG FTW230.GPJ GEO. LOG.GDT 3/9/01

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Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7928



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Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 25 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,967,095 ft
Easting: 1,391,353 ft

Top of Hole
Elevation: 451.9 ft

Hole Number, Field: AP-14
Permanent: AP-7929

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
18.50 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class: TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1	Nbn			ML	SILT					5.8		Dark brown, frozen (24") to moist, fine sand, nonplastic (NP) fines, POSSIBLE FILL
2														
4														
6		2			3	SM	Silty SAND	2	57	41	0.5	3.2	11	Brown, moist, fine sand, NP fines, POSSIBLE FILL
8														
10		3a			4	ML	SILT					3.8		Dark gray to black, moist, NP fines, faint POSSIBLE FILL
12		3b			10	SW-SM	Well-graded SAND with Silt and Gravel	29	61	10	0.5	4		Brown, fine subrounded gravel, fine sand
14														
16		4			12	GP	Poorly graded GRAVEL with Sand				1.8	6.4		Brown, moist, fine subrounded gravel, fine to coarse sand
18														
20		5			11	GP	Poorly graded GRAVEL with Sand				1.5	0.6		Brown, wet, fine subrounded gravel, fine to coarse sand
22					13									
24					12									
26		6			17	SW	Well-graded SAND with Gravel					0.6		Dark gray, wet, fine subrounded gravel, fine to coarse sand, faint organic odor, 5 feet of heaving sand
28					14									Bottom of Hole 26.5 ft Elevation 425.4 ft Groundwater Encountered While Drilling: at depth 18.50 ft PID = (Hot) Photo Ionization Detector
30					15									
32					16									

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May 94 Prev. Ed. Obsolete

Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7929



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ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 25 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,967,080 ft
Easting: 1,391,553 ft

Top of Hole
Elevation: 449.8 ft

Hole Number, Field: Permanent:
AP-15 AP-7930

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
13.70 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frost Class. ASTM D 4083 TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
							%Gravel	%Sand	%Fines				
1		1	Nbn		ML	SILT					0.8		Black, frozen (18") to moist, coarse sand, nonplastic (NP) fines, POSSIBLE FILL
2													
4													
6		2		2	SM	Silty SAND with Organics	23	54	23	1.0	0.6	22	Black, moist, fine to coarse sand, NP fines, wood, metal debris, driller advanced from 2 to 4.5 feet using hydraulics only, POSSIBLE FILL
8													
10		3		3	SM	Silty SAND with Gravel	27	52	21	1.0	0.4	28	Black, moist, fine subrounded gravel, medium to coarse sand, NP fines, some organics present (roots)
12													
14													
16		4		9	GP	Poorly graded GRAVEL with Sand				2.0	1.6		Gray, wet, fine subrounded gravel, fine to coarse sand
18													
20		5		9	SW	Well-graded SAND with Gravel				3.5	0.5		Gray, wet fine subrounded gravel, fine to medium sand
22													
24													
26		6		4	GP	Poorly graded GRAVEL with Sand				1.3	0.5		Gray, wet, fine to coarse subrounded gravel, medium to coarse sand
28													Bottom of Hole 26.5 ft Elevation 423.3 ft Groundwater Encountered While Drilling: at depth 13.70 ft PID = (Hot) Photo Ionization Detector
30													
32													

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Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7930



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 26 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,967,072 ft
Easting: 1,391,781 ft

Top of Hole
Elevation: 446.2 ft

Hole Number, Field: Permanent:
AP-16 AP-7931

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
13.20 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Ackar Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
2		1	Nbn			ML	SILT					0.5		Brown, frozen (24") to moist, fine sand, nonplastic (NP) fines, metallic debris with rust, POSSIBLE FILL
4														
6		2		F2	2 3 3	SM	Silty SAND	6	48	46	0.8	0.4	12	Brown, moist, fine sand, NP fines, rusted metallic and glass debris, POSSIBLE FILL
8														
10		3		F2	2 2 2	SM	Silty SAND	1	54	45	0.5	0.5	28	Brown, moist, fine sand, NP fines, trace of wood and plant debris, POSSIBLE FILL
12														
14														
16		4			8 9 10	SW	Well-graded SAND with Gravel				0.5	0.5		Gray, wet, fine subrounded gravel, fine to coarse sand
18														
20		5			5 5 9	SW	Well-graded SAND with Gravel				1.0	0.5		Gray, wet, fine subrounded gravel, fine to coarse sand
22														
24														
26		6			6 9 8 10	SW	Well-graded SAND with Gravel				1.3	0.5		Gray, wet, fine subrounded gravel, fine to coarse sand, 4 feet of heaving sand
28														Bottom of Hole 26.5 ft Elevation 419.7 ft Groundwater Encountered While Drilling: at depth 13.20 ft PID = (Hot) Photo Ionization Detector
30														
32														

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May 94 Prev. Ed. Obsolete


Project:
FAMILY HOUSING UPGRADE - FTW230


Hole Number:
AP-7931

CORPS OF ENGINEERS ENGINEERING SERVICES		Fort Wainwright, Alaska		Date: 26 Jan 2001										
Soils and Geology Section EXPLORATION LOG		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other		Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other										
Location: Northing: 3,967,005 ft Easting: 1,391,879 ft		Top of Hole Elevation: 452.1 ft												
Hole Number, Field: Permanent AP-17 AP-7932		Driller: Bill Tester		Inspector: Steve Henslee										
Type of Hole: <input type="checkbox"/> other <input type="checkbox"/> Test Pit <input type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input checked="" type="checkbox"/> Piezometer		Depth to Groundwater: 16.40 ft WD		Depth Drilled: 24.5 ft										
Total Depth: 26.5 ft		Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in										
Size and Type of Bit: 8.0 in Rock Bit		Type of Equipment: Acker Soil Max		Type of Samples: Grab and Drive										
Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class: TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
2		1	Nbn			GM	Silty GRAVEL with Sand				0.8	0.5		Brown, frozen, moist, fine subrounded gravel, fine sand, test boring located in roadway, , POSSIBLE FILL
4														
6		2		F4	42 50 52 30	ML	Sandy SILT	8	40	52	1.5	0.4	17	Brown, frozen (7 feet) moist, fine sand, nonplastic (NP) fines, wood fibers in auger cuttings, high blow count due to frozen soil, POSSIBLE FILL
8														
10		3		F2	3 4 3 4	SM	Silty SAND with Gravel	24	33	44	1.0	0.9	16	Brown to dark gray, moist, fine sand, NP fines, 2" piece of wood and wood fragments, POSSIBLE FILL
12														
14														
16		4a			1 2 6 7	ML	SILT					0.4		Gray to black, moist, NP fines, metal debris appeared in auger cuttings while advancing to 14.5 feet
18		4b				GP	Poorly graded GRAVEL with Sand	49	47	4	1.0		10	Gray, moist, fine subrounded gravel, fine to medium sand
20														
22		5			3 2 3 6	SW	Well-graded SAND with Gravel				0.8	0.5		Gray, wet, fine subrounded gravel, medium to coarse sand
24														
26		6			4 8 11 13	SP	Poorly graded SAND with Gravel				1.3	0.4		Gray, wet, fine subrounded gravel, medium to coarse sand
28														Bottom of Hole 26.5 ft Elevation 425.6 ft Groundwater Encountered While Drilling: at depth 16.40 ft PID = (Hot) Photo Ionization Detector
30														
32														

EXPLORATION LOG FTW230.GPJ GEO. LOG GDT 3/9/01

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May 94 Prev. Ed. ObsoleteProject:
FAMILY HOUSING UPGRADE - FTW230Hole Number:
AP-7932

 CORPS OF ENGINEERS ENGINEERING SERVICES Soils and Geology Section EXPLORATION LOG		Fort Wainwright, Alaska				Date: 26 Jan 2001			
		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other				Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other			
		Location: Northing: 3,966,933 ft Easting: 1,391,670 ft				Top of Hole Elevation: 451.6 ft			
Hole Number, Field: AP-18			Permanent: AP-7933			Driller: Bill Tester		Inspector: Steve Henslee	
Type of Hole: <input type="checkbox"/> other <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Piezometer				Depth to Groundwater: 15.50 ft WD		Depth Drilled: 24.5 ft		Total Depth: 26.5 ft	
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit		Type of Equipment: Acker Soil Max		Type of Samples: Grab and Drive	

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class: TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
2		1	Nbn		Grab	ML	Gravelly SILT with Sand				0.3	0.4	Brown, frozen (24") to moist, fine subrounded gravel, fine to coarse sand, nonplastic (NP) fines, POSSIBLE FILL	
4		2			SP	Poorly graded SAND				0.2		Brown, moist, fine to medium sand, NP fines		
6														
8														
10		3	NFS	2 3 10 11	SP	Poorly graded SAND with Gravel	35	63	2	1.5	0.3	2	Brown, moist fine subrounded gravel, medium sand, NP fines	
12														
14		4			GP-GM	Poorly graded GRAVEL with Silt and Sand				0.8	0.3		Mottled brown, moist, fine subrounded gravel, medium to coarse sand, NP fines	
16														
18														
20		5			SP	Poorly graded SAND				0.5	0.2		Gray, wet, fine to coarse sand, 4 feet of heaving sand	
22														
24														
26		6			SP	Poorly graded SAND with Gravel and Cobbles				3.5	0.3		Gray, wet, fine subrounded gravel and cobbles, fine to coarse sand, end of spoon plugged with fractured 2.5 x 3.5 inch rock	
28													Bottom of Hole 26.5 ft Elevation 425.1 ft Groundwater Encountered While Drilling: at depth 15.50 ft PID = (Hot) Photo Ionization Detector	
30														
32														

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Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7933



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 26 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,967,037 ft
Easting: 1,390,469 ft

Top of Hole
Elevation: 459.8 ft

Hole Number, Field: Permanent:
AP-19 AP-7934

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
15.90 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
0		1	Nbn		Grab	ML	SILT with Sand				0.3	0.4		Dark brown, frozen (18") to moist, fine sand, nonplastic (NP) fines, POSSIBLE FILL
2														
4				S2	3 3 3 3	SM	Silty SAND with Gravel	24	42	34	1.3	0.3	13	Brown, moist, fine to coarse sand, NP fines, few plant roots, POSSIBLE FILL
6		2												
8														
10				NFS	5 4 5 4	SP	Poorly graded SAND with Gravel	39	57	4	0.8	0.4	3	Brown, moist, fine subrounded gravel, fine to medium sand
12		3												
14						SP	Poorly graded SAND					0.2		Brown, wet, medium sand
16		4												
18														
20					2 4 3 4	SP	Poorly graded SAND				0.4	0.3		Gray, wet, medium sand
22		5												
24														
26					6 7 8 9	SP	Poorly graded SAND				2.0	0.3		Gray, wet, fine subrounded gravel, fine to coarse sand
28		6												Bottom of Hole 26.5 ft Elevation 433.3 ft Groundwater Encountered While Drilling: at depth 15.90 ft PID = (Hot) Photo Ionization Detector
30														
32														

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Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7934



ALASKA DISTRICT
CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 27 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,966,556 ft
Easting: 1,390,776 ft

Top of Hole
Elevation: 450.8 ft

Hole Number, Field: Permanent:
AP-20 AP-7935

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
17.20 ft WD

Depth Drilled:
25.0 ft

Total Depth:
27.0 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1	Nbn		Grab	ML	SILT					1.8		Brown, frozen (24"), coarse sand, nonplastic (NP) fines, POSSIBLE FILL
2														
4														
6		2		F4	3 4 4 4	ML	SILT		6	94		2.1	34	Brown, moist, fine sand, NP fines, sticks and organics present, POSSIBLE FILL
8														
10		3		F4	3 3 3 4	ML	Sandy SILT		50	50		2.5	22	Brown, moist, fine sand, NP fines, POSSIBLE FILL
12														
14														
16		4			1 2 3 3	ML	Sandy SILT					0.6		Dark gray, wet, fine sand, NP fines, organics present
18														
20		5			2 2 5 4	SM	Silty SAND				1.5	9.0		Gray, wet, fine subrounded gravel, fine to coarse sand
22														
24														
26		6			7 7 13 13	SP	Poorly graded SAND					2.8		Gray, wet, fine subrounded gravel, fine to coarse sand, 4' heaving sand
28														Bottom of Hole 27.0 ft Elevation 423.8 ft Groundwater Encountered While Drilling: at depth 17.20 ft PID = (Hot) Photo Ionization Detector
30														
32														

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Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7935

CORPS OF ENGINEERS ENGINEERING SERVICES		Fort Wainwright, Alaska		Date: 27 Jan 2001										
Soils and Geology Section EXPLORATION LOG		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other		Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other										
Location: Northing: 3,966,685 ft Easting: 1,390,590 ft		Top of Hole Elevation: 449.9 ft												
Hole Number, Field: AP-21 Permanent: AP-7936		Driller: Bill Tester		Inspector: Steve Henslee										
Type of Hole: <input type="checkbox"/> other <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Piezometer		Depth to Groundwater: 16.00 ft WD		Depth Drilled: 24.5 ft Total Depth: 26.5 ft										
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit										
Type of Equipment: Acker Soil Max		Type of Samples: Grab and Drive												
Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class: TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
0		1	Nbn			ML	SILT with Sand					6.8		Brown, frozen (24"), medium to coarse sand, nonplastic (NP) fines, POSSIBLE FILL
2														
4						ML	Sandy SILT					3.2		Brown, moist, fine to medium sand, NP fines, POSSIBLE FILL
6		2			2									
8														
10		3		F4	2	ML	SILT		7	93		2.4	38	Brown, moist, fine to medium sand, NP fines
12					3									
14														
16		4		F4	2	ML	SILT		10	90		2.9	40	Gray, wet, fine sand, low plastic fines
18					1									
20		5			3	SP	Poorly graded SAND					3.4		Gray, wet, fine to medium sand
22					4									
24					4									
26		6			3	SP	Poorly graded SAND					1.1		Gray, wet, fine to medium sand, 6.5 feet of heaving sand
28					5									Bottom of Hole 26.5 ft Elevation 423.4 ft Groundwater Encountered While Drilling: at depth 16.00 ft PID = (Hot) Photo Ionization Detector
30														
32														

EXPLORATION LOG FTW230.GPJ GEO. LOG.GDT 3/9/01

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FAMILY HOUSING UPGRADE - FTW230Hole Number:
AP-7936



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 27 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,967,010 ft
Easting: 1,390,206 ft

Top of Hole
Elevation: 452.2 ft

Hole Number, Field: AP-22
Permanent: AP-7937

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
15.20 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class: TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
0		1	Nbn			ML	SILT with Sand				0.3	2.6		Brown, frozen (6"), coarse sand, NP fines, POSSIBLE FILL
2														
4														
6		2		F2	3	SM	Silty SAND	9	56	35	0.8	1.4	10	Brown, moist, medium sand, POSSIBLE FILL
8														
10		3		NFS	2	SP-SM	Poorly graded SAND with Silt	88	12	0.3	1.8	7		Brown, moist, medium sand, NP fines
12														
14														
16		4			6	SP	Poorly graded SAND with Gravel				0.5	1.8		Brown, moist, fine subrounded gravel, medium to coarse sand
18														
20		5			2	SP	Poorly graded SAND with Gravel				0.8	7.8		Brown, wet, fine subrounded gravel, fine to coarse sand, 3 feet of heaving sand
22														
24														
26		6			7	GP	Poorly graded GRAVEL with Sand				0.8	1.7		Gray, wet, fine subrounded gravel, fine to coarse sand, NP fines
28														Bottom of Hole 26.5 ft Elevation 425.7 ft Groundwater Encountered While Drilling: at depth 15.20 ft PID = (Hot) Photo Ionization Detector
30														
32														

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May 94 Prev. Ed. Obsolete

Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7937



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 28 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,966,502 ft
Easting: 1,390,968 ft

Top of Hole
Elevation: 448.6 ft

Hole Number, Field: Permanent:
AP-23 AP-7938

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☐ Auger Hole ☐ Monitoring Well ☒ Piezometer

Depth to Groundwater:
13.10 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
0		1	Nbn			ML	SILT					0.4		Brown, frozen (19") to moist, nonplastic (NP) fines, POSSIBLE FILL
2														
4														
6		2		F2	8 10 9 7	SM	Silty SAND	8	48	44	0.5	0.7	18	Brown, moist, fine to medium sand, NP fines, POSSIBLE FILL
8														
10		3			2 2 3 4	WOOD	Wood Debris					1.2		Moist, wood debris, little to no recovery, reinserted spoon and drove an additional 18 inches, POSSIBLE FILL
12		3a			2 2 2 2	ML	SILT							Black, moist, slightly plastic silt, 30% wood by volume, POSSIBLE FILL
14														
16		4		F2	1 4 3 2	SM	Silty SAND	1	77	22	0.5	0.6	28	Gray, wet, fine to medium sand, NP fines
18														
20		5			3 8 6 9	SP	Poorly graded SAND				0.5	0.4		Gray, wet, fine subrounded gravel, fine to coarse sand, 1 foot of heaving sand
22														
24														
26		6			8 9 10 18	SP	Poorly graded SAND with Gravel				0.5	0.4		Gray, wet, fine subrounded gravel, fine to coarse sand, 3 feet of heaving sand
28														Bottom of Hole 26.5 ft Elevation 422.1 ft Groundwater Encountered While Drilling: at depth 13.10 ft PID = (Hot) Photo Ionization Detector
30														
32														

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May 94 Prev. Ed. Obsolete

Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7938



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 28 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,966,501 ft
Easting: 1,390,298 ft

Top of Hole
Elevation: 450.2 ft

Hole Number, Field: Permanent:
AP-24 AP-7939

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
14.20 ft WD

Depth Drilled:
24.5 ft

Total Depth:
26.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max


Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
0		1	Nbn		Grab	GP	Poorly graded GRAVEL with Sand				0.8	0.4		Brown, frozen (96"), subrounded gravel, fine to coarse sand, bored 3" A.C. pavement at ground level
2														
4		2	Nbn	F4	23 29 17 10	ML	SILT with Sand	21	79		0.3	2		Brown, frozen (Nbn to 96"), fine sand, NP fines, POSSIBLE FILL
6														
8														
10		3		F4	2 1 3 4	ML	SILT with Sand	18	82		0.3	40		Brown, moist, fine sand, NP fines, POSSIBLE FILL
12						SP	Poorly graded SAND							Brown, moist, fine sand
14														
16		4			2 2 3 4	SP	Poorly graded SAND				0.3	0.4		Brown to grey, wet, fine to medium sand
18														
20		5			4 5 4 4	SP	Poorly graded SAND				0.6	0.4		Gray, wet, fine to medium sand, 3 feet of heaving sand
22														
24														
26		6			5 5 5 7	SP	Poorly graded SAND				0.5	0.4		Gray, wet, fine subrounded gravel, fine to coarse sand
28														Bottom of Hole 26.5 ft Elevation 423.7 ft Groundwater Encountered While Drilling: at depth 14.20 ft PID = (Hot) Photo Ionization Detector
30														
32														

NPA Form 19-E
May 94 Prev. Ed. Obsolete

Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7939

 CORPS OF ENGINEERS ENGINEERING SERVICES Soils and Geology Section EXPLORATION LOG		Fort Wainwright, Alaska				Date: 28 Jan 2001		
		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other				Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other		
		Location: Northing: 3,966,798 ft Easting: 1,390,258 ft				Top of Hole Elevation: 450.9 ft		
Hole Number, Field: AP-25 Permanent: AP-7940			Driller: Bill Tester			Inspector: Steve Henslee		
Type of Hole: <input type="checkbox"/> other <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Piezometer			Depth to Groundwater: 15.40 ft WD		Depth Drilled: 49.5 ft		Total Depth: 51.5 ft	
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit		Type of Equipment: Acker Soil Max		Type of Samples: Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PI (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1				ML	SILT					0.2		Brown, moist, nonplastic (NP) fines, POSSIBLE FILL Brown, moist, fine to medium sand, NP fines, POSSIBLE FILL
2						SM	Silty SAND							
4														
6		2			2	SP-SM	Poorly graded SAND with Silt and Gravel	28	60	12	1.5	0.3	18	Brown, moist, fine to medium sand
8														
10		3			2	SM	Silty SAND with Gravel	20	53	27	1.0	0.3	9	Brown, moist, fine to medium sand
12														
14														
16		4			4	SP	Poorly graded SAND				0.5	0.3		Brown, moist, fine to medium sand
18														
20		5			3	SP	Poorly graded SAND				1.0	0.4		Gray, wet, fine to medium sand
22														
24														
26		6			5	SP	Poorly graded SAND with Gravel				1.3	0.6		Gray, wet, subrounded gravel, medium to coarse sand, 1.5 feet of heaving sand
28														
30		7			4	SP	Poorly graded SAND with Gravel				1.0	0.7		Gray, wet, subrounded gravel, medium to coarse sand, sampler possibly lost sand fraction, 6 feet of heaving sand
32														

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May 94 Prev. Ed. Obsolete

Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7940



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 28 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,966,798 ft
Easting: 1,390,258 ft

Top of Hole
Elevation: 450.9 ft

Hole Number, Field: Permanent:
AP-25 AP-7940

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
15.40 ft WD

Depth Drilled:
49.5 ft

Total Depth:
51.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max


Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
34														
36														
38														
40		8			5 5 10 10	SP	Poorly graded SAND with Gravel				1.5	0.6		Gray, wet, subrounded gravel, fine to coarse sand
42														
44														
46														
48														
50		9			20 28 35 38	SP	Poorly graded SAND with Gravel				1.0	0.6		Gray, wet, subrounded gravel, fine to medium sand, 4 feet of heaving sand
52														Bottom of Hole 51.5 ft Elevation 399.4 ft Groundwater Encountered While Drilling: at depth 15.40 ft PID = (Hot) Photo Ionization Detector
54														
56														
58														
60														
62														
64														
66														

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Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7940

 CORPS OF ENGINEERS ENGINEERING SERVICES Soils and Geology Section EXPLORATION LOG		Fort Wainwright, Alaska		Date: 29 Jan 2001	
		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other		Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other	
		Location: Northing: 3,966,870 ft Easting: 1,390,534 ft		Top of Hole Elevation: 451.9 ft	
Hole Number, Field: Permanent: AP-26 AP-7941		Driller: Bill Tester		Inspector: Steve Henslee	
Type of Hole: <input type="checkbox"/> other <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Piezometer		Depth to Groundwater: 14.20 ft WD		Depth Drilled: 49.5 ft Total Depth: 51.5 ft	
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit	
		Type of Equipment: Ackar Soil Max		Type of Samples: Grab and Drive	

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
2		1				GM	Silty GRAVEL with Sand				0.3	0.7		Brown, frozen (18") moist, subrounded gravel, fine sand, NP fines, POSSIBLE FILL
4					4 3 5 7	SP	Poorly graded SAND					0.5		Brown, moist, medium sand
6		2												
8														
10		3		NFS	3 5 6 7	SP-SM	Poorly graded SAND with Silt and Gravel	38	56	7	1.5	0.5	3	Brown, moist, fine subrounded gravel, fine to coarse sand
12														
14					7 10 9 8	SP	Poorly graded SAND with Gravel				0.8	0.4		Brown, wet, fine subrounded gravel, fine to coarse sand
16														
18														
20		5			5 6 6 5	SP	Poorly graded SAND with Gravel				0.8			Brown, wet, fine subrounded gravel, fine to coarse sand
22														
24														
26		6			8 5 8 6	SP	Poorly graded SAND with Gravel				0.8			Gray, wet, fine subrounded gravel, fine to coarse sand, 3.5 feet of heaving sand
28														
30		7			4 4 7 11	SP	Poorly graded SAND with Gravel				1.3			Gray, wet, fine subrounded gravel, fine to coarse sand, 4 feet of heaving sand
32														

EXPLORATION LOG FTW230 GPJ GEO LOG GDT 3/9/01

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FAMILY HOUSING UPGRADE - FTW230Hole Number:
AP-7941



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 29 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,966,870 ft
Easting: 1,390,534 ft

Top of Hole
Elevation: 451.9 ft

Hole Number, Field: AP-26
Permanent: AP-7941

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
14.20 ft WD

Depth Drilled:
49.5 ft

Total Depth:
51.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max


Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
34														
36														
38														
40		8			6 8 10 9	SP	Poorly graded SAND with Gravel				0.8			Gray, wet, fine subrounded gravel, fine to coarse sand, 2 feet of heaving sand
42														
44														
46														
48														
50		9			8 11 9 15	SP	Poorly graded SAND with Gravel				1.0			Gray, wet, fine subrounded gravel, fine to coarse sand, 2 feet of heaving sand
52														Bottom of Hole 51.5 ft Elevation 400.4 ft Groundwater Encountered While Drilling: at depth 14.20 ft PID = (Hot) Photo Ionization Detector
54														
56														
58														
60														
62														
64														
66														

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Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7941


		CORPS OF ENGINEERS ENGINEERING SERVICES		Fort Wainwright, Alaska				Date: 29 Jan 2001		
Soils and Geology Section EXPLORATION LOG						Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other			Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other	
						Location: Northing: 3,966,466 ft Easting: 1,390,295 ft			Top of Hole Elevation: 449.6 ft	
Hole Number, Field: AP-27			Permanent: AP-7942			Driller: Bill Tester		Inspector: Steve Henslee		
Type of Hole: <input type="checkbox"/> other <input type="checkbox"/> Test Pit <input type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input checked="" type="checkbox"/> Piezometer					Depth to Groundwater: 14.00 ft WD		Depth Drilled: 25.0 ft		Total Depth: 27.0 ft	
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit		Type of Equipment: Acker Soil Max		Type of Samples: Grab and Drive		

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class, TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1	Nbn			ML	SILT					0.8		Brown, frozen (48"), nonplastic (NP) fines, POSSIBLE FILL
2														
4		2		PFS	5 6 6 4	SM	Silty SAND		80	20		0.0	6	Brown, moist, fine to medium sand
6														
8														
10		3		NFS	2 2 2 1	SM	Silty SAND		87	13		0.3	6	Brown, moist, fine to medium sand
12														
14		4			13 14 7 7	SP	Poorly graded SAND with Gravel				1.5	-0.2		Gray, wet, fine to coarse subrounded gravel, fine to coarse sand, 1 foot of heaving sand
16														
18														
20		5			6 7 5 7	SP	Poorly graded SAND with Gravel				1.3	0.2		Gray, wet, fine to coarse subrounded gravel, fine to coarse sand, 4 feet of heaving sand
22														
24														
26		6			10 8 4 3	SP	Poorly graded SAND with Gravel				1.3	0.5		Gray, wet, fine to coarse subrounded gravel, fine to coarse sand, 4 feet of heaving sand
28														Bottom of Hole 27.0 ft Elevation 422.6 ft Groundwater Encountered While Drilling: at depth 14.00 ft PID = (Hot) Photo Ionization Detector
30														
32														

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May 94 Prev. Ed. Obsolete

Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7942

 CORPS OF ENGINEERS ENGINEERING SERVICES		Fort Wainwright, Alaska		Date: 30 Jan 2001					
		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other		Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other					
		Location: Northing: 3,966,539 ft Easting: 1,390,588 ft		Top of Hole Elevation: 450.0 ft					
Hole Number, Field: AP-28		Permanent: AP-7943		Driller: Bill Tester		Inspector: Steve Henslee			
Type of Hole: <input type="checkbox"/> other <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Piezometer				Depth to Groundwater: 15.50 ft WD		Depth Drilled: 49.0 ft		Total Depth: 51.0 ft	
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit		Type of Equipment: Acker Soil Max		Type of Samples: Grab and Drive	

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083 Nbn	Frost Class TM 5-822-5 F4	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1			3	ML	SILT					1.6		Brown, Frozen (24"), nonplastic fines, POSSIBLE FILL
2					3									
4		2			3	ML	SILT with Sand	26	74		0.9	16		Brown, moist, fine to medium sand, NP fines, POSSIBLE
6					3									
8					3									
10		3		S2	3	SM	Silty SAND	87	13		1.6	6		Brown, moist, fine to medium sand
12					3									
14		4			4	SP	Poorly graded SAND with Gravel							Brown, wet, fine to medium sand
16					4									
18					3									
20		5			3	SP	Poorly graded SAND with Gravel			0.8				Gray, wet, fine subrounded gravel, fine to coarse sand, 2 feet of heaving sand
22					3									
24		6			4	SP	Poorly graded SAND with Gravel			1.5				Gray, wet, fine subrounded gravel, fine to coarse sand, 2 feet of heaving sand
26					6									
28					20									
30		7			21	SP	Poorly graded SAND with Gravel			1.8				Gray, wet, fine subrounded gravel, fine to coarse sand, 4 feet of heaving sand
32					25									
					25									
					21									

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May 94 Prev. Ed. Obsolete

Project: FAMILY HOUSING UPGRADE - FTW230

Hole Number: AP-7943

CORPS OF ENGINEERS
ENGINEERING SERVICESSoils and Geology Section
EXPLORATION LOG

Fort Wainwright, Alaska

Date: 30 Jan 2001

Drilling Agency: ☒ Alaska District
☐ OtherElevation Datum:
☒ MSL ☐ otherLocation: Northing: 3,966,539 ft
Easting: 1,390,588 ftTop of Hole
Elevation: 450.0 ftHole Number, Field: Permanent:
AP-28 AP-7943Driller:
Bill TesterInspector:
Steve HensleeType of Hole: ☐ other _____
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ PiezometerDepth to Groundwater:
15.50 ft WDDepth Drilled:
49.0 ftTotal Depth:
51.0 ftHammer Weight:
300 lbsSplit Spoon I.D.:
2.5 inSize and Type of Bit:
8.0 in Rock BitType of Equipment:
Acker Soil MaxType of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
34														
36														
38														
40		8			10 11 13 8	SP	Poorly graded SAND				0.6	0.7		Gray, wet, fine subrounded gravel, fine to coarse sand, 3.5 feet of heaving sand
42														
44														
46														
48														
50		9			9 7 9 14	SP	Poorly graded SAND				0.5	1.1		Gray, wet, fine subrounded gravel, fine to coarse sand, 2 feet of heaving sand
52														Bottom of Hole 51.0 ft Elevation 399.0 ft Groundwater Encountered While Drilling: at depth 15.50 ft PID = (Hot) Photo Ionization Detector
54														
56														
58														
60														
62														
64														
66														

NPA Form 19-E
May 94 Prev. Ed. ObsoleteProject:
FAMILY HOUSING UPGRADE - FTW230Hole Number:
AP-7943

EXPLORATION LOG FTW230 GPJ GEO LOG GDT 3/9/01



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 30 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,967,065 ft
Easting: 1,390,532 ft

Top of Hole
Elevation: 451.4 ft

Hole Number, Field: AP-29
Permanent: AP-7944

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
16.40 ft WD

Depth Drilled:
49.5 ft

Total Depth:
51.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1	Nbn			ML	SILT					1.9		Brown, frozen (24"), nonplastic (NP) fines, POSSIBLE FILL
2														
4														
6		2		F4	3 3 3 3	ML	SILT		7	93		0.9	31	Brown, moist, fine to medium sand, POSSIBLE FILL
8														
10		3		NFS	8 8 11 8	GP	Poorly graded GRAVEL with Sand	51	45	4	0.8	1.4	2	Brown, moist, fine subrounded gravel, fine to medium sand
12														
14														
16		4			5 3 3 3	SP	Poorly graded SAND				0.4	0.9		Brown, moist, fine subrounded gravel, fine to medium sand
18														
20		5		S2	1 2 2 3	SP	Poorly graded SAND		96	4		0.2	27	Gray, wet, fine to medium sand
22														
24														
26		6			3 10 10 10	GP	Poorly graded GRAVEL with Sand				1.0	0.6		Brown, wet, fine subrounded gravel, fine to medium sand, 2 feet of heaving sand
28														
30														
32		7			2 1 0.5 0.5 1 1	GP	Poorly graded GRAVEL with Sand				0.8	1.1		Gray, wet, fine subrounded gravel, fine to medium sand, overdrove spoon 1 foot due to preceding blow counts of .5, 5 feet of heaving sand

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May 94 Prev. Ed. Obsolete

Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7944



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 30 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,967,065 ft
Easting: 1,390,532 ft

Top of Hole
Elevation: 451.4 ft

Hole Number, Field: AP-29
Permanent: AP-7944

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
16.40 ft WD

Depth Drilled:
49.5 ft

Total Depth:
51.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max

Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
34														Unable to collect sample at 34.5 feet due to heaving sand, 5 feet of heaving sand
36														
38														
40														Unable to collect sample at 39.5 feet due to heaving sand, 6 feet of heaving sand
42														
44														
46														
48														
50		8			20 21 15 18	SP	Poorly graded SAND				0.5	0.4		Gray, wet, fine subrounded gravel, fine to medium sand, 3.5 feet of heaving sand
52														Bottom of Hole 51.5 ft Elevation 399.9 ft Groundwater Encountered While Drilling: at depth 16.40 ft PID = (Hot) Photo Ionization Detector
54														
56														
58														
60														
62														
64														
66														

NPA Form 19-E
May 94 Prev. Ed. Obsolete

Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7944



CORPS OF ENGINEERS
ENGINEERING SERVICES

Soils and Geology Section EXPLORATION LOG

Fort Wainwright, Alaska

Date: 31 Jan 2001

Drilling Agency: ☒ Alaska District
☐ Other

Elevation Datum:
☒ MSL ☐ other

Location: Northing: 3,966,849 ft
Easting: 1,390,890 ft

Top of Hole
Elevation: 451.8 ft

Hole Number, Field: Permanent:
AP-30 AP-7945

Driller:
Bill Tester

Inspector:
Steve Henslee

Type of Hole: ☐ other
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:
16.40 ft WD

Depth Drilled:
49.5 ft

Total Depth:
51.5 ft

Hammer Weight:
300 lbs

Split Spoon I.D.:
2.5 in

Size and Type of Bit:
8.0 in Rock Bit

Type of Equipment:
Acker Soil Max


Type of Samples:
Grab and Drive

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
1		1	Nbn			ML	SILT				0.3	3.6		Dark brown, frozen (18") to moist, coarse sand, nonplastic (NP) fines, POSSIBLE FILL
2														
4														
6		2		F2	6 5 5	SM	Silty SAND		55	46		2.2	7	Brown, moist, fine sand, NP fines, POSSIBLE FILL
8														
10		3		PFS	3 4 6 10	GP-GM	Poorly graded GRAVEL with Silt and Sand	58	37	5	1.8	2.6	2	Brown, moist, fine subrounded gravel, fine to medium sand
12														
14														
16		4			10 20 15 12	SP	Poorly graded SAND with Gravel				1.0	6.2		Brown, moist, fine subangular gravel, fine to coarse sand
18														
20		5			5 9 11 8	SP	Poorly graded SAND				0.5	1.0		Gray, wet, fine subangular gravel, fine to coarse sand
22														
24														
26		6			15 22 22 20	SP	Poorly graded SAND with Gravel				1.3			Gray, wet, fine subrounded gravel, fine to coarse sand, NP fines, 1 foot of heaving sand
28														
30		7			11 11 19 16	SP	Poorly graded SAND with Gravel				1.5	0.6		Gray, wet, fine subangular gravel, fine to coarse sand, 2 feet of heaving sand
32														

NPA Form 19-E
May 94 Prev. Ed. Obsolete

Project:
FAMILY HOUSING UPGRADE - FTW230

Hole Number:
AP-7945

 CORPS OF ENGINEERS ENGINEERING SERVICES		Fort Wainwright, Alaska		Date: 31 Jan 2001					
		Drilling Agency: <input checked="" type="checkbox"/> Alaska District <input type="checkbox"/> Other		Elevation Datum: <input checked="" type="checkbox"/> MSL <input type="checkbox"/> other					
Soils and Geology Section EXPLORATION LOG		Location: Northing: 3,966,849 ft Easting: 1,390,890 ft		Top of Hole Elevation: 451.8 ft					
		Hole Number, Field: AP-30 Permanent: AP-7945		Driller: Bill Tester		Inspector: Steve Henslee			
Type of Hole: <input type="checkbox"/> other <input type="checkbox"/> Test Pit <input checked="" type="checkbox"/> Auger Hole <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Piezometer		Depth to Groundwater: 16.40 ft WD		Depth Drilled: 49.5 ft		Total Depth: 51.5 ft			
Hammer Weight: 300 lbs		Split Spoon I.D.: 2.5 in		Size and Type of Bit: 8.0 in Rock Bit		Type of Equipment: Acker Soil Max		Type of Samples: Grab and Drive	

Depth (ft)	Lithology	Sample	Frozen ASTM D 4083	Frost Class. TM 5-822-5	Blow Count	Symbol	Classification ASTM: D 2487 or D 2488	Grain Size			Max Size (in)	PID (ppm)	% Water	Description and Remarks
								%Gravel	%Sand	%Fines				
34	8				7 13 8	SP	Poorly graded SAND with Gravel				0.8	0.5	Gray, wet, fine subrounded gravel, fine to coarse sand, 2 feet of heaving sand	
36														
38														
40	9				12 12 14 15	SP	Poorly graded SAND with Gravel				1.3	0.5	Gray, wet, fine subrounded gravel, fine to coarse sand	
42														
44														
46	10				13 13 21 21	SP	Poorly graded SAND with Gravel				2.0	0.6	Gray, wet, fine subrounded gravel, fine to coarse sand	
48														
50														
52													Bottom of Hole 51.5 ft Elevation 400.3 ft Groundwater Encountered While Drilling: at depth 16.40 ft PID = (Hot) Photo Ionization Detector	
54														
56														
58														
60														
62														
64														
66														

EXPLORATION LOG FTW230.GPJ GEO LOG.GDT 9/9/01

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 May 94 Prev. Ed. Obsolete

 Project:
FAMILY HOUSING UPGRADE - FTW230

 Hole Number:
AP-7945

Appendix C

Analytical Data Tables

Table 1

Ft. Wainwright Family Housing Revitalization
Method AK101, Gasoline Range Organics
Method AK102, Diesel Range Organics
Method AK103, Residual Range Organics
Method 8021B, BTEX
January, 2001

		QC Dup	QA Dup	
LOCATION OF SAMPLE:	AP-7916	AP-7916	AP-7916	AP-7924
DATE OF SAMPLE:	1/19/01	1/19/01	1/19/01	1/23/01
TYPE OF SAMPLE:	Soil	Soil	Soil	Soil
DEPTH OF SAMPLE:(FEET)	9.5	9.5	9.5	4" - 6"
FIELD SAMPLE ID: 01FWHR-	01SL	02SL	03SL	08SL
TESTING LABORATORY:	LTL	LTL	CT&E	LTL
LABORATORY SAMPLE ID:	0101532-01	0101532-02	1010040001	0101532-06
DATE RECEIVED:	1/26/01	1/26/01	1/26/01	1/26/01
DATE ANALYZED:	1/30 - 31/01	1/30 - 31/01	2/1 - 6/01	1/30 - 31/01
CONCENTRATION UNITS:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
 Gasoline Range Organics	 ND (2.4) J	 ND (3.1) J	 ND (5.39) R	 ND (1.4)
 Diesel Range Organics	 14	 16	 ND (14.8)	 7.7
 Residual Range Organics	 51	 59	 ND (24.5)	 19
 Benzene	 ND (0.019) R	 0.032 J	 0.0362 R	 ND (0.011)
Toluene	ND (0.029) R	ND (0.037) J	ND (0.108) R	ND (0.017)
Ethylbenzene	ND (0.019) R	ND (0.025) J	ND (0.108) R	ND (0.011)
m,p-Xylene (Sum of Isomers)	ND (0.038) R	ND (0.05) J	ND (0.108) R	ND (0.023)
o-Xylene	ND (0.019) R	ND (0.025) J	ND (0.108) R	ND (0.011)

LTL: Laucks Testing Laboratories, Seattle, WA.

CT&E: CT&E Environmental Services, Anchorage, AK.

J: Estimated Value.

R: Rejected due to low surrogate recoveries.

ND: Not Detected. (The number in parentheses is the Method Reporting Limit (MRL)).

Table 1

Ft. Wainwright Family Housing Revitalization

Method AK101, Gasoline Range Organics

Method AK102, Diesel Range Organics

Method AK103, Residual Range Organics

Method 8021B, BTEX

January, 2001

		QC Dup	QA Dup	
LOCATION OF SAMPLE:	AP-7927	AP-7927	AP-7927	AP-7930
DATE OF SAMPLE:	1/24/01	1/24/01	1/24/01	1/25/01
TYPE OF SAMPLE:	Soil	Soil	Soil	Soil
DEPTH OF SAMPLE:	1	1	1	4.5
FIELD SAMPLE ID: 01FWHR-	11SL	12SL	13SL	18SL
TESTING LABORATORY:	LTL	LTL	CT&E	LTL
LABORATORY SAMPLE ID:	0101532-08	0101532-09	1010040003	0101597-01
DATE RECEIVED:	1/26/01	1/26/01	1/26/01	1/31/01
DATE ANALYZED:	1/30 - 31/01	1/30 - 31/01	1/31 - 2/5/01	2/5 - 8/01
CONCENTRATION UNITS:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Gasoline Range Organics	ND (1.4)	ND (1.4)	ND (3.09)	2.6 J
Diesel Range Organics	5.9	6.7	ND (10.2)	88 J
Residual Range Organics	28	28	ND (16.9)	290 J
Benzene	ND (0.011)	ND (0.011)	ND (0.0154)	0.022 J
Toluene	ND (0.017)	ND (0.017)	ND (0.0618)	0.023 J
Ethylbenzene	ND (0.011)	ND (0.011)	ND (0.0618)	ND (0.015)
m,p-Xylene (Sum of Isomers)	ND (0.023)	ND (0.022)	ND (0.0618)	ND (0.03)
o-Xylene	ND (0.011)	ND (0.011)	ND (0.0618)	ND (0.015)

LTL: Laucks Testing Laboratories, Seattle, WA.

CT&E: CT&E Environmental Services, Anchorage, AK.

J: Estimated Value.

ND: Not Detected. (The number in parentheses is the Method Reporting Limit (MRL)).

Table 2

Ft. Wainwright Family Housing Revitalization

Method 8081A

Pesticides

January, 2001

LOCATION OF SAMPLE:	AP-7918	AP-7919	AP-7924
DATE OF SAMPLE:	1/20/01	1/21/01	1/23/01
TYPE OF SAMPLE:	Soil	Soil	Soil
DEPTH OF SAMPLE:(FEET)	4" - 6"	4" - 6"	0.5 - 1"
FIELD SAMPLE ID: 01FWHR-	04SL	06SL	07SL
TESTING LABORATORY:	LTL	LTL	LTL
LABORATORY SAMPLE ID:	0101532-03	0101532-04	0101532-05
DATE RECEIVED:	1/26/01	1/26/01	1/26/01
DATE ANALYZED:	2/2/01	2/2/01	2/2/01
CONCENTRATION UNITS:	µg/kg	µg/kg	µg/kg
4,4'-DDD	ND (5.5)	ND (7.7)	ND (4.3)
4,4'-DDE	ND (5.5)	250	42
4,4'-DDT	ND (5.5)	480	86
Aldrin	ND (2.8)	ND (4)	ND (2.2)
alpha-BHC	ND (2.8)	ND (4)	ND (2.2)
alpha-Chlordane	ND (2.8)	ND (4)	ND (2.2)
beta-BHC	ND (2.8)	ND (4)	ND (2.2)
delta-BHC	ND (2.8)	ND (4)	ND (2.2)
Dieldrin	ND (5.5)	ND (7.7)	ND (4.3)
Endosulfan I	ND (2.8)	ND (4)	ND (2.2)
Endosulfan II	ND (5.5)	ND (7.7)	ND (4.3)
Endosulfan sulfate	ND (5.5)	ND (7.7)	ND (4.3)
Endrin	ND (5.5)	ND (7.7)	ND (4.3)
Endrin aldehyde	ND (5.5)	ND (7.7)	ND (4.3)
Endrin ketone	ND (5.5)	ND (7.7)	ND (4.3)
gamma-BHC (Lindane)	ND (2.8)	ND (4)	ND (2.2)
gamma-Chlordane	ND (2.8)	ND (4)	ND (2.2)
Heptachlor	ND (2.8)	ND (4)	ND (2.2)
Heptachlor epoxide	ND (2.8)	ND (4)	ND (2.2)
Methoxychlor	ND (28)	ND (40)	ND (22)
Toxaphene	ND (280)	ND (400)	ND (220)

LTL: Laucks Testing Laboratories, Seattle, WA.

ND: Not Detected. (The number in parentheses is the Method Reporting Limit (MRL)).

Table 2

Page 2 of 2

**Ft. Wainwright Family Housing Revitalization
Method 8081A
Pesticides
January, 2001**

		QC Dup	QA Dup		
LOCATION OF SAMPLE:	AP-7926	AP-7926	AP-7926	AP-7937	AP-7942
DATE OF SAMPLE:	1/24/01	1/24/01	1/24/01	1/27/01	1/29/01
TYPE OF SAMPLE:	Soil	Soil	Soil	Soil	Soil
DEPTH OF SAMPLE:(FEET)	4" - 6"	4" - 6"	4" - 6"	4" - 6"	4" - 6"
FIELD SAMPLE ID: 01FWHR-	15SL	16SL	17SL	19SL	20SL
TESTING LABORATORY:	LTL	LTL	CTE	LTL	LTL
LABORATORY SAMPLE ID:	0101532-10	0101532-11	1010040004	0101597-02	0101597-03
DATE RECEIVED:	1/26/01	1/26/01	1/26/01	1/31/01	1/31/01
DATE ANALYZED:	2/2/01	2/2/01	2/8/01	2/9/01	2/9/01
CONCENTRATION UNITS:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
4,4'-DDD	ND (4.7)	ND (4.5)	ND (520]	ND (4.7)	ND (4.2)
4,4'-DDE	140	120	68.4 J	ND (4.7)	43 J
4,4'-DDT	230	200	113 J	ND (4.7)	230 J
Aldrin	ND (2.4)	ND (2.3)	ND (2.6]	ND (2.4)	ND (2.2)
alpha-BHC	ND (2.4)	ND (2.3)	ND (2.6]	ND (2.4)	ND (2.2)
alpha-Chlordane	ND (2.4)	ND (2.3)	ND (2.6]	ND (2.4)	ND (2.2)
beta-BHC	ND (2.4)	ND (2.3)	ND (2.6]	ND (2.4)	ND (2.2)
delta-BHC	ND (2.4)	ND (2.3)	ND (2.6]	ND (2.4)	ND (2.2)
Dieldrin	ND (4.7)	ND (4.5)	ND (2.6]	ND (4.7)	ND (4.2)
Endosulfan I	ND (2.4)	ND (2.3)	ND (2.6]	ND (2.4)	ND (2.2)
Endosulfan II	ND (4.7)	ND (4.5)	ND (2.6]	ND (4.7)	ND (4.2)
Endosulfan sulfate	ND (4.7)	ND (4.5)	ND (2.6]	ND (4.7)	ND (4.2)
Endrin	ND (4.7)	ND (4.5)	ND (2.6]	ND (4.7)	ND (4.2)
Endrin aldehyde	ND (4.7)	ND (4.5)	ND (2.6]	ND (4.7)	ND (4.2)
Endrin ketone	ND (4.7)	ND (4.5)	ND (2.6]	ND (4.7)	ND (4.2)
gamma-BHC (Lindane)	ND (2.4)	ND (2.3)	ND (2.6]	ND (2.4)	ND (2.2)
gamma-Chlordane	ND (2.4)	ND (2.3)	ND (2.6]	ND (2.4)	ND (2.2)
Heptachlor	ND (2.4)	ND (2.3)	ND (2.6]	ND (2.4)	ND (2.2)
Heptachlor epoxide	ND (2.4)	ND (2.3)	ND (2.6]	ND (2.4)	ND (2.2)
Methoxychlor	ND (24)	ND (23)	ND (2.6]	ND (24)	ND (22)
Toxaphene	ND (240)	ND (230)	ND (170]	ND (240)	ND (220)

LTL: Laucks Testing Laboratories, Seattle, WA.

CT&E: CT&E Environmental Services, Anchorage, AK.

J: Estimated Value.

ND: Not Detected. (The number in parentheses is the Method Reporting Limit (MRL)).

Table 3**Page 1 of 4****Ft. Wainwright Family Housing Revitalization****Method 6010A - Lead****January, 2001**

		QC Dup	QA Dup	
LOCATION OF SAMPLE:	AP-7916	AP-7916	AP-7916	AP-7924
DATE OF SAMPLE:	1/19/01	1/19/01	1/19/01	1/23/01
TYPE OF SAMPLE:	Soil	Soil	Soil	Soil
DEPTH OF SAMPLE:	9.5	9.5	9.5	4" - 6"
FIELD SAMPLE ID: 01FWHR-	01SL	02SL	03SL	08SL
TESTING LABORATORY:	LTL	LTL	CTE	LTL
LABORATORY SAMPLE ID:	0101532-01	0101532-02	1010040001	0101532-06
DATE RECEIVED:	1/26/01	1/26/01	1/26/01	1/26/01
DATE ANALYZED:	2/5/01	2/5/01	2/6/01	2/5/01
CONCENTRATION UNITS:	mg/kg	mg/kg	mg/kg	mg/kg
Lead	5.9	4.9	ND (8.84)	7.6

LTL: Laucks Testing Laboratories, Seattle, WA.

CT&E: CT&E Environmental Services, Anchorage, AK.

ND: Not Detected. (The number in parentheses is the Method Reporting Limit (MRL)).

Table 3

Page 2 of 4

**Ft. Wainwright Family Housing Revitalization
Method 6010A - Lead
January, 2001**

		QC Dup	QA Dup
LOCATION OF SAMPLE:	AP-7926	AP-7926	AP-7926
DATE OF SAMPLE:	1/24/01	1/24/01	1/24/01
TYPE OF SAMPLE:	Soil	Soil	Soil
DEPTH OF SAMPLE:	4" - 6"	4" - 6"	4" - 6"
FIELD SAMPLE ID: 01FWHR-	15SL	16SL	17SL
TESTING LABORATORY:	LTL	LTL	CTE
LABORATORY SAMPLE ID:	0101532-10	0101532-11	1010040004
DATE RECEIVED:	1/26/01	1/26/01	1/26/01
DATE ANALYZED:	2/5/01	2/5/01	2/6/01
CONCENTRATION UNITS:	mg/kg	mg/kg	mg/kg
Lead	11.3	12.2	14.9

LTL: Laucks Testing Laboratories, Seattle, WA.

CT&E: CT&E Environmental Services, Anchorage, AK.

ND: Not Detected. (The number in parentheses is the Method Reporting Limit (MRL)).